



# **Section C:1**

## ***Nuclear Material Stabilization***

### **PROJECT MANAGERS**

P.M. Knollmeyer, RL  
(509) 376-7435

G.W. Jackson, FH  
(509) 373-6622

## SUMMARY

The Nuclear Material Stabilization (NMS) mission consists of the Plutonium Finishing Plant (PFP), WBS 1.4.5 (PBS TP05).

NOTE: The Safety, Conduct of Operations, milestone table and Cost/Schedule data contained herein is as of July 31, 2001. Other information is updated as noted through August 22, 2001.

Fiscal-year-to-date milestone performance (EA, DOE-HQ, and RL) shows that three milestones (50 percent) were completed on or ahead of schedule, one milestone (17 percent) was completed late, and two milestones (33 percent) are overdue. Further details can be found in the milestone exception report following the cost and schedule variance analysis.

## NOTABLE ACCOMPLISHMENTS

### Maintain Safe & Secure SNM

The Operational Test Procedure (OTP) for the can piercing device in support of oxide startup was completed. The Justification for Continued Operations (JCO) in 2736-ZB to mitigate fire hazards identified by the Fire Hazards Analysis (FHA) has been implemented. Thirteen additional twenty-eight (28) position storage racks in Vault 4 for storage of 3013 containers were installed.

### Maintain Safe and Compliant PFP

The final Facility Evaluation Board (FEB) report for the on-site assessment conducted June 11, 2001 was issued July 27. The overall performance of the NMSP was rated as satisfactory. Noteworthy practices identified by the FEB include the chemical management system and qualification of drill team members. The FEB also cited the current safety culture, improvement in maintenance performance, and the Emergency Management Plan as facility strengths. Through July 31, 2001, there were 608 calendar days (over 2.0 million staff hours) since the last recorded lost workday injury. For the first time since June 1999 there were no criticality safety nonconformances during July 2001 of any type (deficiency, infraction, etc.)

### Stabilization of Nuclear Material

**Residues  $\frac{3}{4}$**  The recalibration documentation for the Segmented Gamma Scan Assay System (SGSAS) was approved on July 18, 2001 and measurement of Hanford ash was resumed. Eleven pipe overpack containers (POCs) containing 11,634 grams bulk were packed in July and sixteen POCs containing 17,579 grams bulk have been packaged as of August 17, 2001.

**Oxides/Metals  $\frac{3}{4}$**  The Fluor Hanford Readiness Assessment Team completed their review of packaging oxides into a Bagless Transfer Can (BTC) on July 26<sup>th</sup> with three pre-start findings, one post-start finding and three observations. The Plutonium Finishing Plant requested RL approval to proceed with packaging oxides into a BTC on July 31<sup>st</sup>. All pre-start actions had been completed. Metals stabilization and packaging continued during July with the last of the Plutonium metals packaged into a BTC (twenty items total for the month, 298 overall total). Fluor Hanford completed a readiness assessment for packaging oxides into Bagless Transfer Cans and received authorization from RL to begin packaging on August 1, 2001. Sixteen oxide containing BTCs had been made as of August 28, 2001, bringing the total for the year to 314.

**Solutions** ¾ A total of thirty-one (31) liters of solution were processed through the magnesium hydroxide  $[Mg(OH)_2]$  hot plates during the month of July, bringing the FYTD total to 593 liters.

- **Oxalate Precipitation** ¾ Processing thirty liters (in three precipitation columns) of double pass filtrate (DPF) with oxalate precipitation was completed on Friday, July 13, 2001. A Supplement Analysis (SA) to the Environmental Impact Statement (EIS), which documents the addition of the oxalic acid and direct discard processes, was submitted to RL for approval.
- **Direct Discard** ¾ The Startup Notification Technical Description was finalized and transmitted to RL for approval on July 12, 2001. Approval of the Standard Startup Review Activity Review checklist was obtained and sign-off of checklist items initiated. The Tri Party Agreement change request was submitted to the Washington State Department of Ecology.

**Polycubes** - Meetings were held with Dr. Cox of the Confederated Tribes of the Umatilla Indian Reservation in response to questions he had on processing of polycubes. Dr. Cox's prime concern was the potential to emit polychlorinated dibenzo-p-dioxins (PCDD) as a result of thermal treatment of the polyvinyl chloride (PVC) tape used on the cubes. A white paper was prepared and presented to him, which identifies the stoichiometric postulated emission to be 68 grams of PCDD. However, other physical processes limited the predicted emission to several orders of magnitude lower.

## Disposition of Nuclear Material

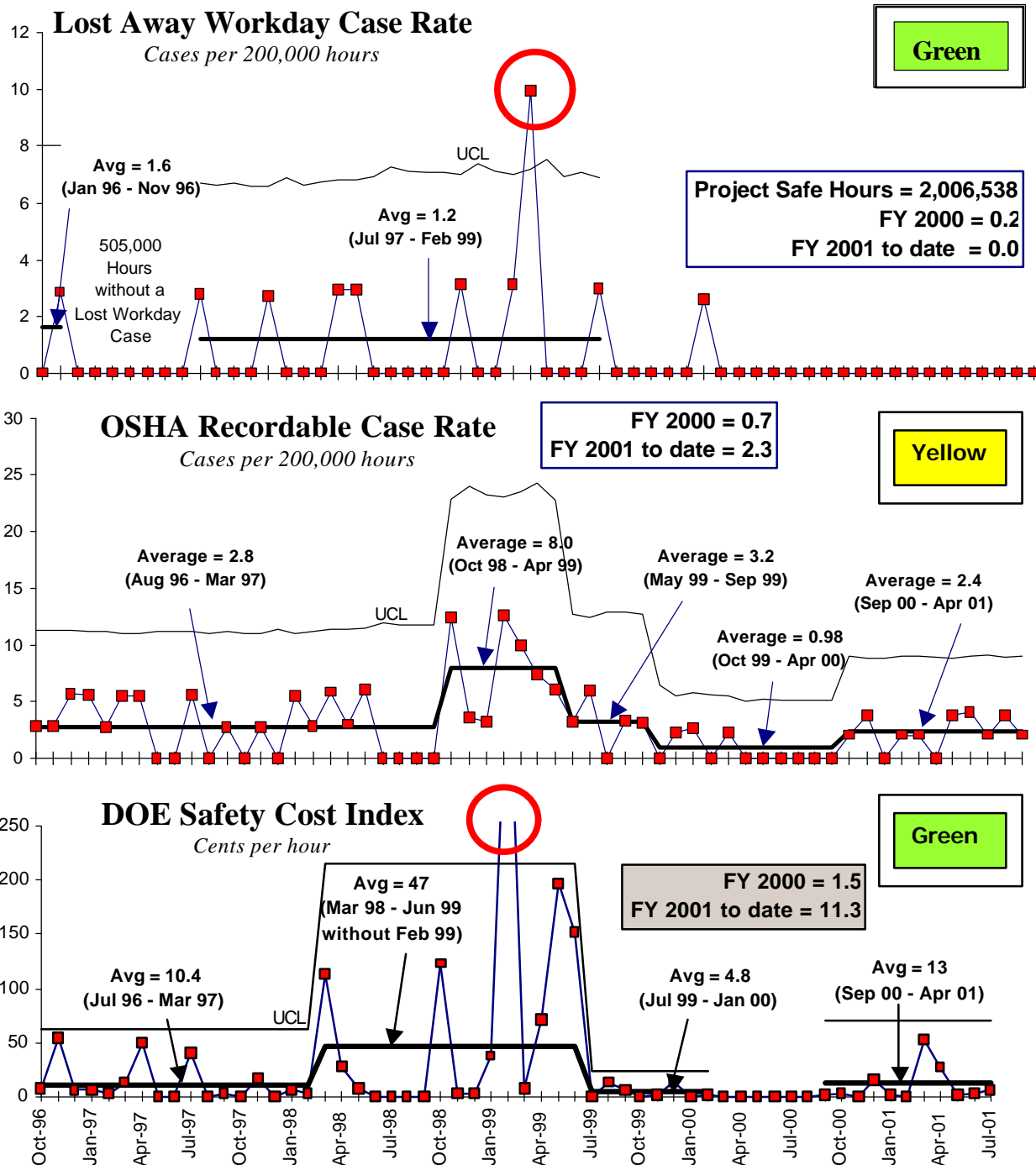
Through July 31, 2001, the Outer Can Welder has produced three hundred and nine (309) DOE-STD-3013 containers. Packaging of all Pu Metal into 3013 containers has been completed, leaving oxides and brushings that were generated from the metal repackaging to complete the DNFSB milestone. Three drums of uranium (14 items) were shipped to the burial grounds. The ACCESS database necessary to meet the electronic data base requirements of DOE Order 1013 for Pu metal has been developed. An evaluation of the risks of storing non-3013 packaged material in the vault without the use of dry air atmosphere was performed and the results drafted in the form of a 'white paper'. The Nuclear Material Forecast report was also completed. RL is required to submit this report to DOE-HQ in early August.

## Plutonium Facility Deactivation

Up to \$250K may be available from DOE-HQ (EM-22 and EM-40) in FY 2001 and 2002 to support the further evaluation of alternative plutonium storage concepts at Hanford. A proposal for use of these funds was finalized as a result of a meeting held here with FH, RL, Project Enhancement Corporation, Polestar and Science Applications International Corporation representatives the first week of August. The first \$125K has been authorized by EM-22 and PEC has been tasked with developing two white papers, both scheduled for issuance prior to September 30, on the potential applications of CERCLA and recently developed/deployed size reduction technology to the project.

## SAFETY

Through July 31 2001, there were 608 calendar days (exceeding 2.0 million staff hours) since the last recorded lost workday injury. There has however, been an increase in the OSHA recordable case rate. Management staff has increased its presence in the field during all shifts to address this recent trend.



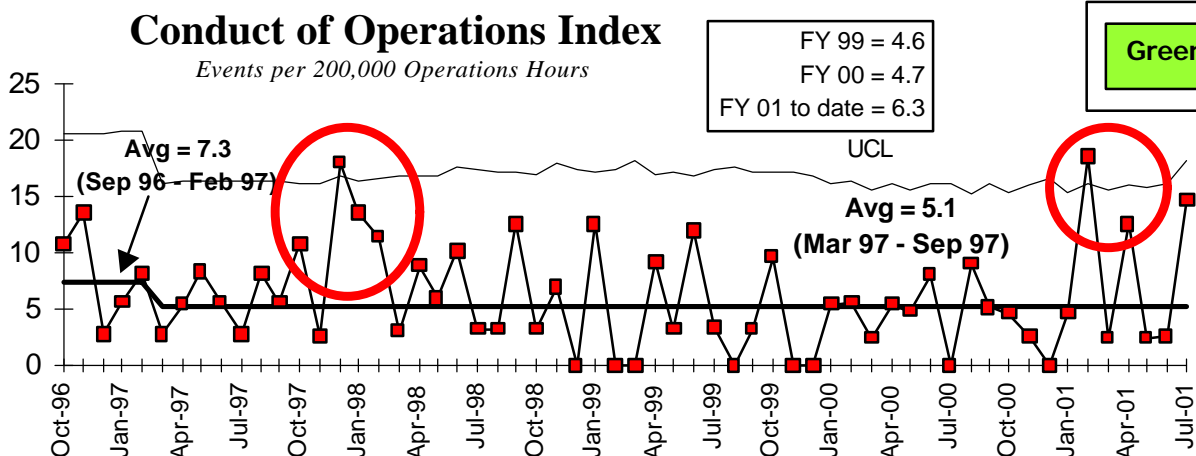
## ISMS STATUS

Preparations for the Voluntary Protection Plan "Star" status application are on going.

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## CONDUCT OF OPERATIONS

An all day production pause was held August 24, 2001 to reemphasize the Integrated Safety Management System (ISMS) theme in completing work safely.



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## BREAKTHROUGHS / OPPORTUNITIES FOR IMPROVEMENT

### Breakthroughs

- **Project W-460** ¾ This project will complete construction by October 1, 2001 (eighteen months ahead of the original schedule). *(No further status to be provided)*
- **Canister Monitoring System Test** - Successfully demonstrated the technical basis of the Canister Monitoring System by coupling magnetic pressure sensors with radio frequency tagging technology on July 17. This demonstration confirmed the system's ability to (1) accurately read internal 3013 container pressure changes, (2) transmit wireless data to a remote computer, and (3) measure electronic and 3013 container internal and external temperature changes. *(No further status to be provided)*
- **New hot plate design** ¾ A procurement contract was placed with Bellhaven to provide an improved hot plate for use in the 230-C-2 glovebox. A new design, to improve the reliability of the hot plate and drying of the precipitate, has been developed and a prototype is in fabrication for testing at PFP. The prototype is scheduled to be available by mid August. *(No further status to be provided)*

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### Opportunities for Improvement

Nothing to report.

## UPCOMING ACTIVITIES




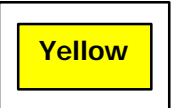
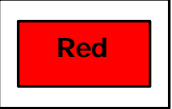
**Disposition of Nuclear Material** – Complete Project W-460 construction activities by October 1, 2001. Complete hot startup of the 2736-ZB Stabilization and Packaging System (W-460) by November 12, 2001.

**Oxides/Metals** – Complete stabilization and repackaging of Pu metals and oxides in 3013 outer cans by August 31, 2001.

## MILESTONE ACHIEVEMENT

MILESTONE TYPE	FISCAL YEAR-TO-DATE				REMAINING SCHEDULED			TOTAL FY 2001
	Completed Early	Completed On Schedule	Completed Late	Overdue	Forecast Early	Forecast On Schedule	Forecast Late	
Enforceable Agreement	1	0	0	0	0	0	0	1
DOE-HQ	0	0	0	1	0	1	0	2
RL	2	0	1	1	0	1	0	5
<b>Total Project</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>8</b>

Only TPA/EA milestones and all FY2001 overdue and forecast late milestones are addressed in this report. Milestones overdue are deleted from the Milestone Exception Report once they are completed. The following chart summarizes the FY2001 TPA/EA milestone achievement and a Milestone Exception Report follows. The last milestone table summarizes the first six months of FY 2002 TPA/EA milestones.

FY2001 Tri-Party Agreement / EA Milestones			
M-083-07 (TRP-01-515)	"Complete Repackaging & Shipping of Rocky Flats Ash to the CWC"	Due April 30, 2001 – Completed on March 29, 2001.	
M-083-08 (TRP-01-516)	"Complete Requirements to Ship Rocky Flats Ash to WIPP"	A change package has been approved that reschedules FH and RL negotiations with the regulators to begin November 2001. The NMSP believes responsibility for this milestone resides with Waste Management. Efforts are underway to relocate this milestone accordingly.	
DNFSB Commitments			
M-IP-114 (TRP-01-501) R94-01	"Ship Alloys to SRS or Complete Stabilization of Alloys"	Due June 30, 2001 – Packaging of metal alloys into 3013 containers was completed July 13, 2001. Additionally, all metal items were similarly packaged by month end. Pipe-n-go packaging of residue alloys was previously completed during June 2001. However, completion of this activity is currently on hold pending a new moisture measurement method.	
M-IP-110 (TRP-02-500)	"Complete Packaging of Metal Inventory"	Due August 31, 2001 – Currently forecast for a September 18, 2001 completion.	
M-IP-106 (TRP-01-500) (R94-01)	"Complete Stabilization & Packaging Plutonium Solutions"	Due December 31, 2001 – Baseline Change Request FSP-2001-064 was approved that extends completion of this workscope from December 31, 2001 to July 31, 2002. A letter was sent to RL requesting the milestone in the Implementation Plan be changed.	

## MILESTONE EXCEPTION REPORT

<u>Number/WBS</u>	<u>Level</u>	<u>Milestone Title</u>	<u>Baseline Date</u>	<u>Forecast Date</u>
<b>Overdue – 2</b>				
TRP-01-510	RL	Complete Annual IPMP Revision 1.4.5	05/31/2001	08/31/2001
<b>Cause:</b> Agreement between FH and RL allowed deferral of this milestone due to the June 30, 2001 Nuclear Material Stabilization Project (NMSP) rebaseline commitment.				
<b>Impact:</b> None.				
<b>Corrective Action:</b> None.				

**TRP-01-501 HQ** Ship Alloys to SRS or Complete Stabilization of Alloys 06/30/2001 TBD  
**1.4.5**

**Cause:** Completion of this activity is on hold pending a new moisture measurement method.

**Impact:** Currently being evaluated. A lack of an approved moisture measurement system could be significant.

**Corrective Action:** FH, RL, and other sites throughout the DOE complex are currently investigating alternate moisture measurement technologies.

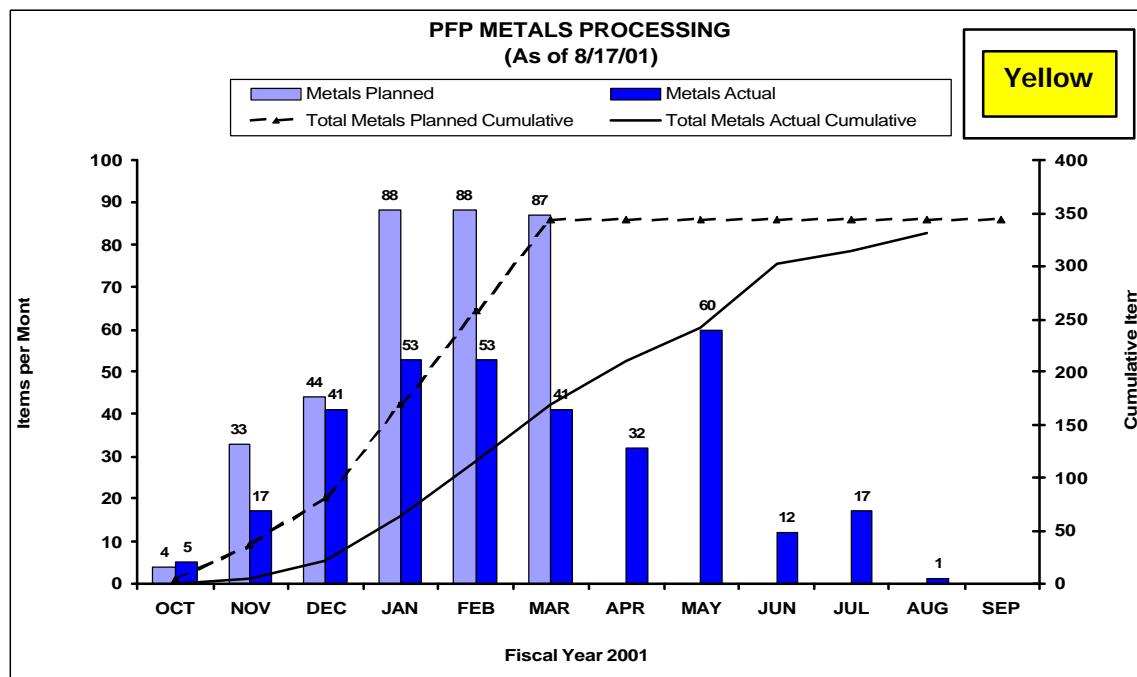
**FY 2002 Tri-Party Agreement / EA Milestones**

Number	Milestone Title	Status
	Nothing to report at this time.	



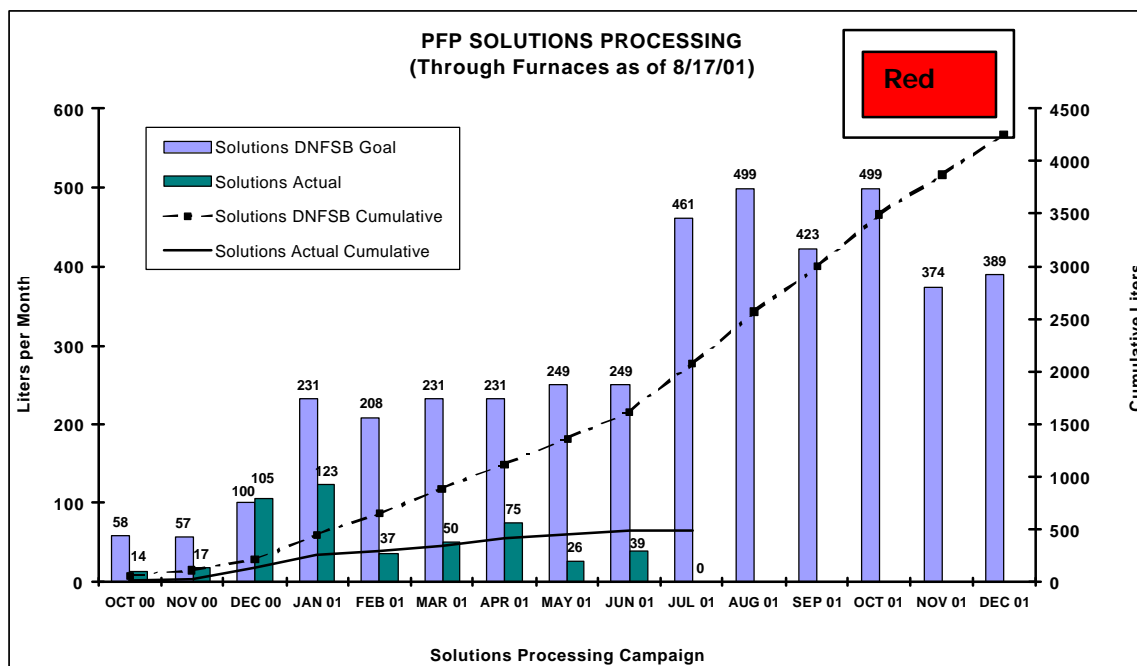
## PERFORMANCE OBJECTIVES

### OXIDES/METALS/POLYCUBES STABILIZATION



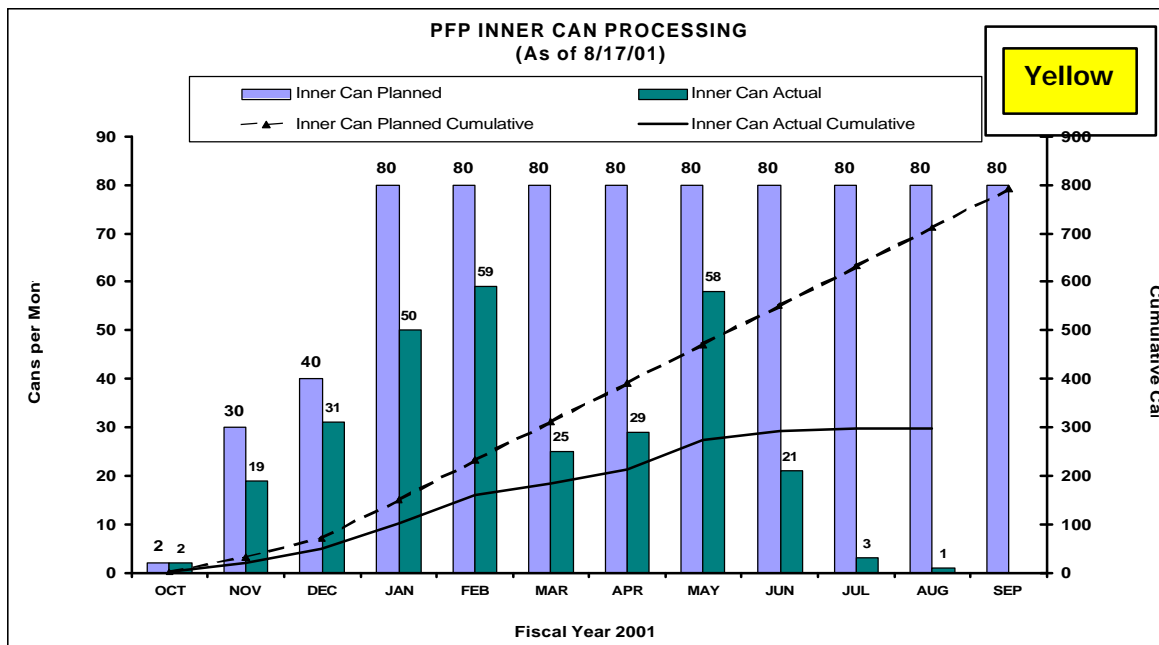
Slightly behind schedule.

### SOLUTIONS STABILIZATION



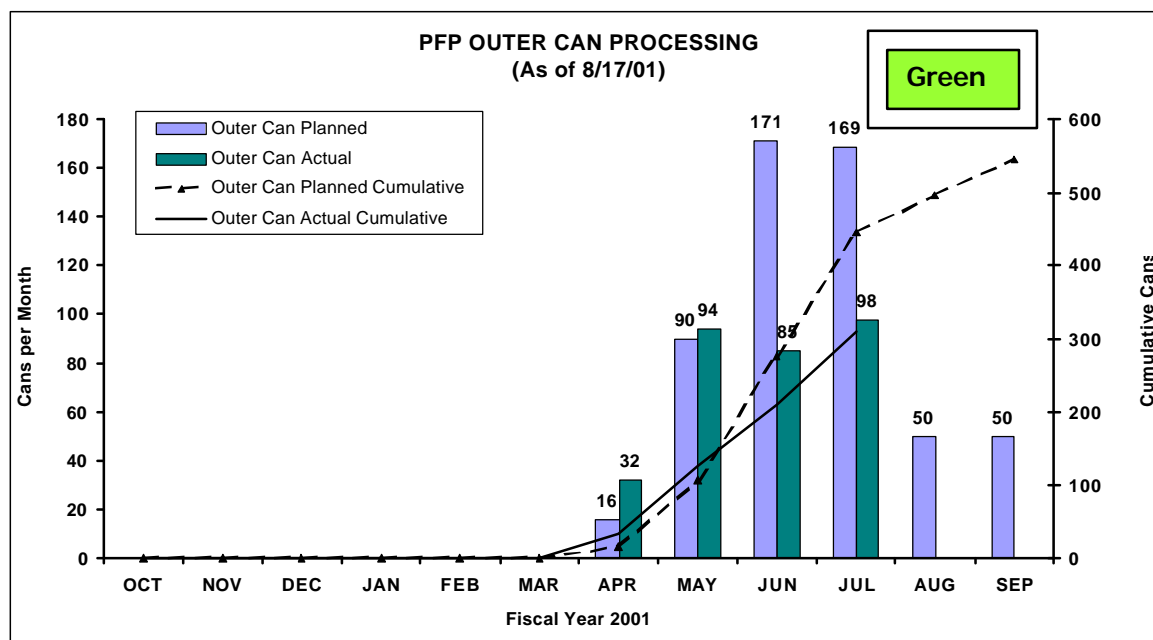
BCR FSP-2001-064 was approved, extending completion of this workscope from December 31, 2001, to July 31, 2002. A letter was sent to RL requesting the milestone in the Implementation Plan be changed.

## Inner Can Processing



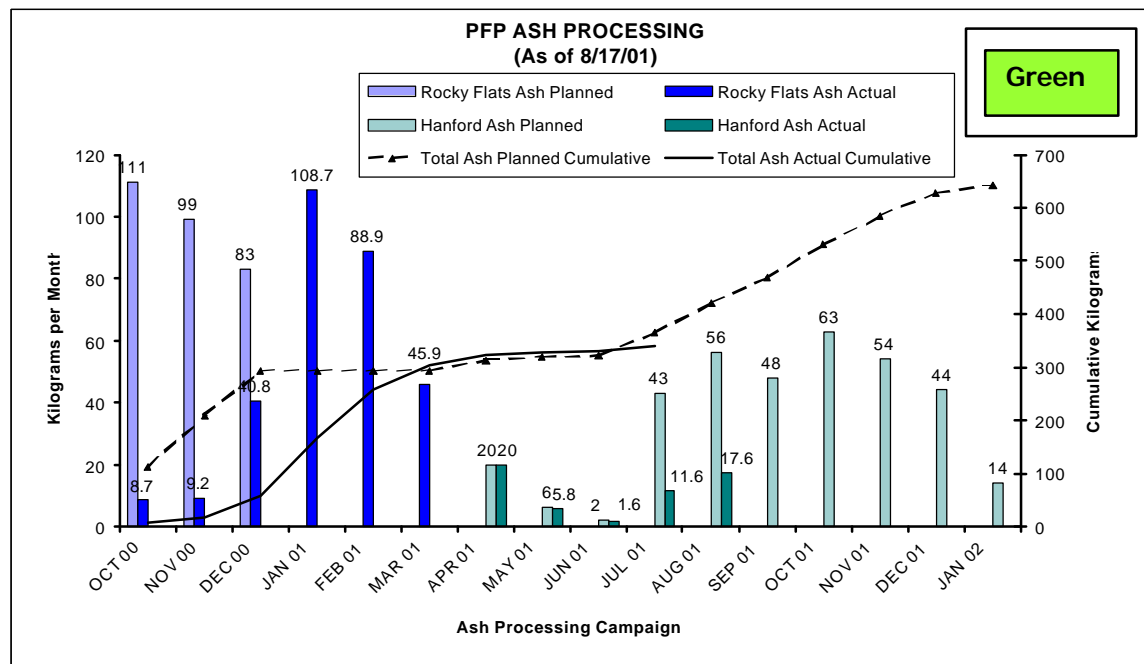
Operational reliability of the 245-5Z Bagless Transfer System (BTS) and the recent disqualification of the Super Critical Fluid Extraction System (SFE) as a moisture measurement system have impacted this activity.

## PFP Outer Can Processing



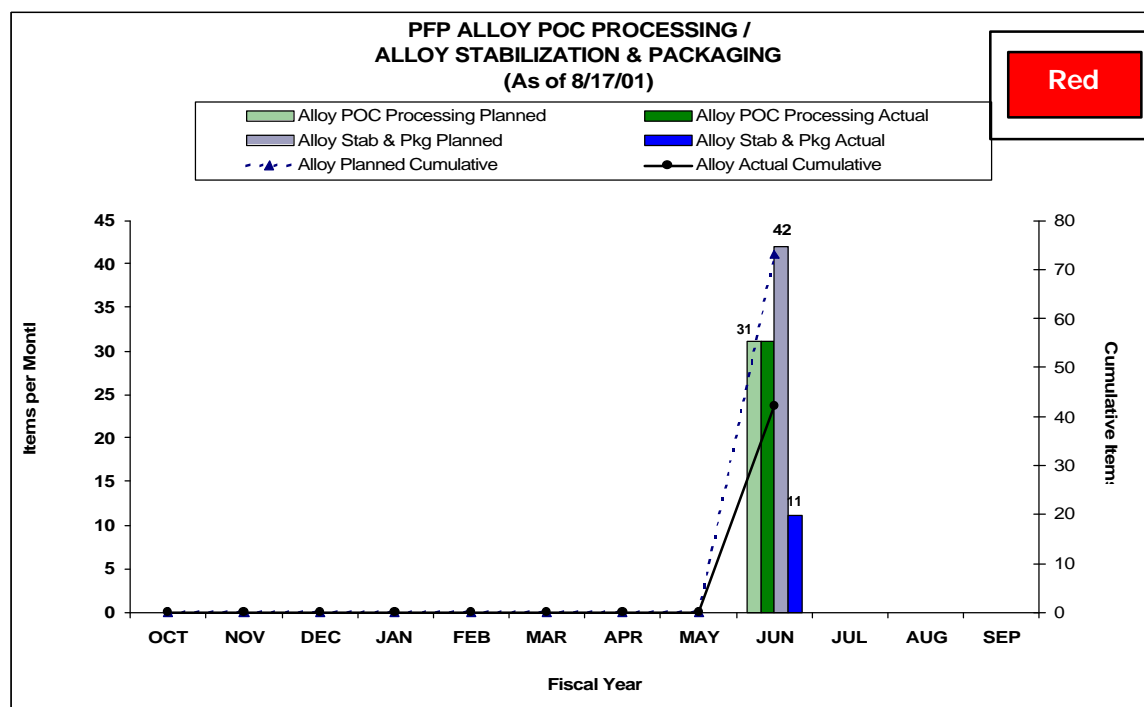
Packaging of all Pu Metal into 3013 containers has been completed, leaving oxides and brushings that were generated from the metal repackaging to complete the DNFSB milestone.

## RESIDUE STABILIZATION



Eleven pipe overpack containers (POCs) containing 11,634 grams bulk were packed in July and 16 POCs containing 17,579 grams bulk have been packaged as of August 17, 2001.

## ALLOY STABILIZATION & PACKAGING



Completion of this activity is on hold pending a new moisture measurement method.

## FY 2001 SCHEDULE / COST PERFORMANCE – ALL FUND TYPES CUMULATIVE TO DATE STATUS – (\$000)

		FYTD								
By PBS		BCWS	BCWP	ACWP	SV	%	CV	%	PEM	EAC
WBS 1.4.5 PFP		\$ 89,665	\$ 85,785	\$ 88,091	\$ (3,880)	-4%	\$ (2,306)	-3%	\$ 113,464	\$ 115,771
PBS TP05	Deactivation									
<b>Total</b>		<b>\$ 89,665</b>	<b>\$ 85,785</b>	<b>\$ 88,091</b>	<b>\$ (3,880)</b>	<b>-4%</b>	<b>\$ (2,306)</b>	<b>-3%</b>	<b>\$ 113,464</b>	<b>\$ 115,771</b>

## FY TO DATE SCHEDULE / COST PERFORMANCE

The current schedule and cost variances continue to show improvement and remain within the reporting threshold.

For all active sub-PBSs and TTPs associated with the Operations/Field Office, Fiscal Year to Date (FYTD) Cost and Schedule variances exceeding + / - 10 percent or one million dollars require submission of narratives to explain the variance.

### SCHEDULE VARIANCE ANALYSIS: (-\$3.9M)

#### Nuclear Materials Stabilization Project- 1.4.5/TP-05

**Description/Cause:** The current four percent unfavorable schedule variance represents a \$1.8M improvement from June 2001. The Solutions Stabilization project schedule variance is due to the delay in thermal stabilization product from  $Mg(OH)_2$  and the delayed shift to use of the five (5) furnaces. These activities have been impacted by the disqualification of the Super Critical Fluid Extraction (SFE) and a lack of an alternative moisture measurement method. The moisture measurement issue has also delayed stabilization and packaging of the remaining alloys.

**Impact:** Expedient resolution of the SFE issue is necessary to preclude further oxide, solutions and alloys processing impact. Completion of alloys processing will be deferred to FY 2002 to allow identification and implementation of alternative SFE technologies for moisture measurement.

**Corrective Action:** Delivery of a new, re-designed hot plate (prototype), to improve the reliability of the hot plate and drying of the precipitate will be available the middle of August 2001. Additionally, direct discard and a shift to an oxalate precipitation process, planned for August 2001, are expected to further improve solutions stabilization processing. Additionally, implementation of the oxalic acid precipitation process will allow using the LOI method for moisture measurement and permit thermal stabilization through the furnaces rather than wait for a replacement technology for the SFE. FH and DOE-RL are investigating alternative SFE moisture measurement technologies that will result in alloys and solutions processing to proceed.

### COST VARIANCE ANALYSIS: (-\$2.3M)

#### Nuclear Materials Stabilization Project- 1.4.5/TP-05

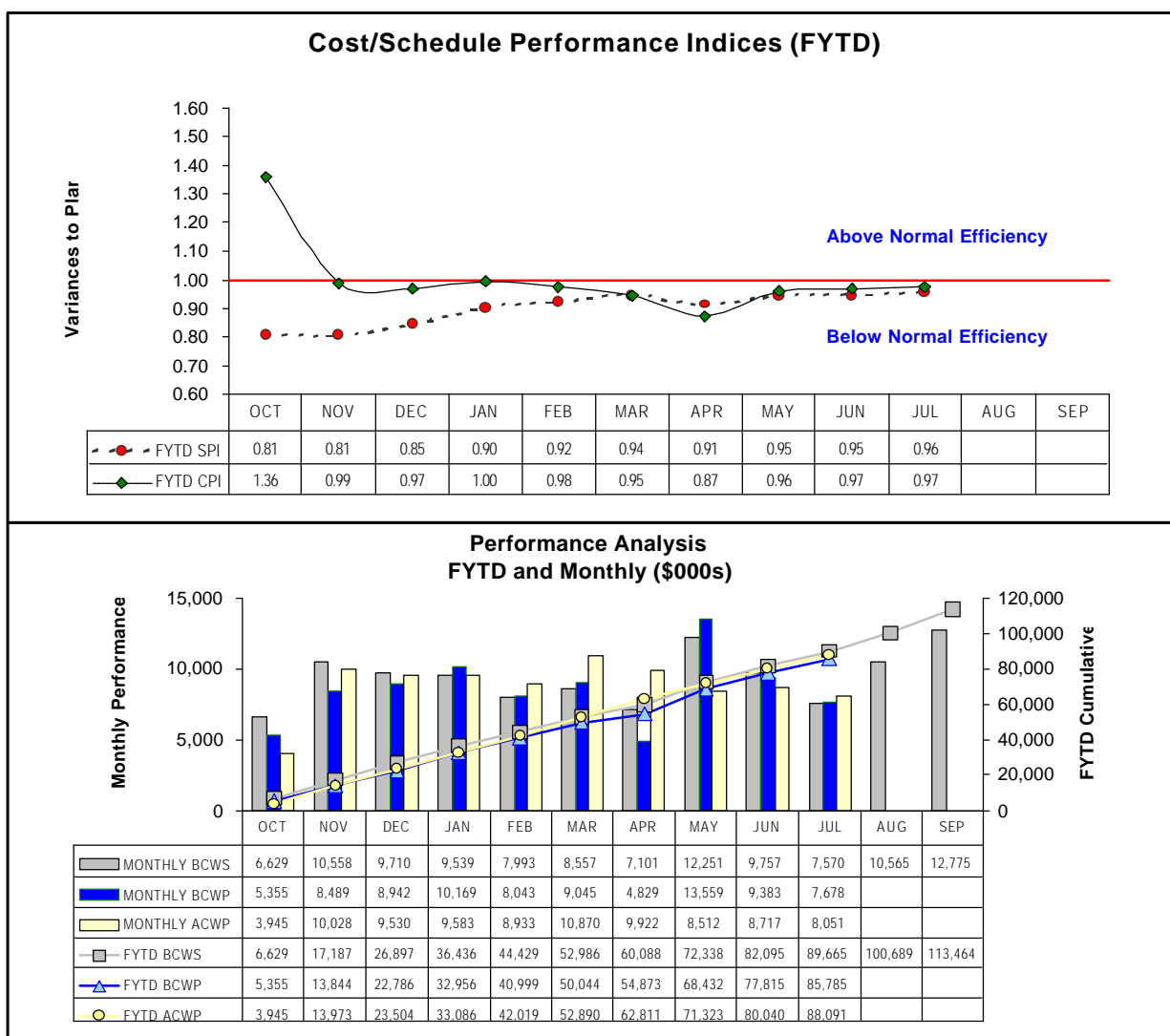
**Description/Cause:** The current three percent unfavorable cost variance represents an improvement of \$600K from June 2001. The major contributors to the current cost variance are late completion of Rocky Flats Ash processing, extended metals stabilization due to operational reliability of the 234-5Z Bagless Transfer System (BTS), the unavailability of an approved residual moisture measurement technology to support completion of the alloys stabilization campaign, and Project W-460 overruns which are primarily due to increased scope and costs associated with preparation of operational/project documentation

including the Criticality and SAR documents, project support, administration support, shielding panels, IAEA room preparation, and procurements of 3013 containers.

**Impact:** The costs associated with late completion of Rocky Flats Ash are non-recoverable, but Project W-460 is expected to complete within the established funding level. Work scope carry over to complete alloys processing is estimated at approximately \$350K.

**Corrective Action:** Repair and alignment of the 234-5Z BTS unit has been completed and demonstrated improved operational reliability. Cost control actions limiting overtime, subcontract costs and material purchases have been implemented and are showing positive results. Funds management at the project level will be utilized to offset overruns at the lower levels of the WBS.

## SCHEDULE / COST PERFORMANCE (MONTHLY AND FYTD)



## FUNDS MANAGEMENT

### FUNDS VS SPENDING FORECAST (\$000)

### FY 2001 to Date

Yellow

	Funds	FYSF	Variance
<b>1.4.5 Nuclear Materials Stabilization</b>			
TP05			
Project Completion - Operating	\$ 95,455	\$ 93,950	\$ 1,505
- Line Item	\$ 12,125	\$ 12,125	0
<b>Total</b>	<b>\$ 107,580</b>	<b>\$ 106,075</b>	<b>\$ 1,505</b>

*[Status through July 2001]*

## ISSUES

### Technical Issues

**Issue:** Moisture measurement of stabilized oxides via supercritical fluids extraction was disapproved by RL.

**Impact:** As a result, there is no approved method for moisture testing of stabilized alloy oxides or an approved method for all impure oxides. As a result completion of the November 2003 stretch Performance Incentive may be impacted.

**Corrective Action:** Measurements for "pure" oxides can be performed via Loss on Ignition (LOI) as long as the ambient humidity in the analysis glove box does not exceed a predetermined value. The method for moisture measurements of impure oxides remains to be determined.

**Issue:** A portion of the oxides to be processed contains fairly high levels of chloride. The corrosive properties of the chloride off-gases will cause problems during thermal stabilization.

**Impact:** Completion of oxides stabilization could be impacted.

**Corrective Action:** Various efforts are continuing with Pacific Northwest National Laboratory (PNNL) and Rocky Flats to resolve the chloride issues (e.g., characterization and pretreatment, as well as other methods). PNNL's request for funding (\$100K) from the Nuclear Material Focus Area has been approved and plans for testing are proceeding.

**Issue:** Completion of stabilization and packaging of plutonium alloys is contingent upon installation and testing of alternate moisture measurement equipment.

**Impact:** Completion of alloy processing will be carryover work scope for next fiscal year.

**Corrective Action:** The type of equipment and location are currently under evaluation.

**Issue:** Integrity of water delivery system may not be sufficient to meet the design basis fire requirements for the 2736-ZB facility. Specific areas of concern include; increasing frequency of water delivery system pipe failures and frequency of water hammer transients at the PFP that are not evaluated.

**Impact:** Overall impact to the facility and related processes is under investigation.

**Corrective Action:** Preliminary investigations are being initiated by operations.

The final report is expected the week of Sept 10th and will be reviewed for factual accuracy.

## Regulatory, External, and DOE Issues and DOE Requests

**Issue:** No other issues identified at this time.

**Impact:** None at this time.

**Corrective Action:** None at this time.

## BASILINE CHANGE REQUESTS CURRENTLY IN PROCESS

BCR NUMBER	DATE ASSIGNED	BCR TITLE	FY 01 IMPACT	SCH	TECH	DRAFT COPY	TO FH	FH APPROVAL	DOE-RL APPROVAL
FSP-2001-054	15-May-01	Interoffice Work orders	(\$1,835)	---	---	05-Jun-01	19-Jul-01	26-Jul-01	Not Required
FSP-2001-067	18-Jul-01	Delay SRIDs to FY 2002	TBD	X	---				
FSP-2001-068	18-Jul-01	Transfer 2nd BTS to CENRTC	----	---	---	----	--- Cancelled ---		
FSP-2001-069	18-Jul-01	TGA Moisture Measurement	\$235	X	---	27-Jul-01	27-Jul-01	31-Jul-01	17-Aug-01
TBD		SRS Acceptance Criteria	X	X					

## KEY INTEGRATION ACTIVITIES

- Techniques for improving the precipitate processing continue to be worked jointly by staff members of the PPSL and PNNL.
- Fluor Hanford, Bechtel Hanford and the Department of Energy Richland Operations Office (DOE) are working together to resolve questions regarding the NMSP provided calculation of plutonium concentration in packaged waste from two Hanford facilities undergoing deactivation in the 200 West Area.
- PFP is working with General Electric (GE) Vallecitos on a plan to transport a fuel pin to Hanford. This will assist GE Vallecitos with the final step in their nuclear material deinventory.
- PFP coordination with Lawrence Livermore National Laboratory (LLNL) to ship requested oxide material (81 kg) to that facility continues. A final determination of the material LLNL is requesting is still being negotiated. The shipper/receiver plan was submitted to LLNL for review. A meeting between DOE, LLNL and PFP to finalize transportation, container, and shipping agreements is expected to be held in mid-August.